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DOW CHEM CO - CHLORINATED
NAPHTHALENES

Microfiche # 206141

Document ID #

OFFICE OF TOXIC SUBSTANCES
CODING FORM FOR GLOBAL INDEXING

REV. 7/27/82

Microfiche No. (7) •	206141	1	No. of Pages	2
Doc I.D.	878210477	3	Old Doc I.D.	8DS
Case No. (s)	OTS 84003A II			5
Date Produced (6)	6 011144	Date Rec'd (6)	7 122082	8
		Conf. Code •	N	
Check One:	<input type="checkbox"/> Publication	<input type="checkbox"/> Internally Generated	<input checked="" type="checkbox"/> Externally Generated	
Pub/Journal Name				9
				9
Author(s)				10
Organ. Name	DOW CHEM CO			11
Dept/Div				12
P.O. Box	13	Street No./Name		14
City	MIDLAND	15 State	MI 16 Zip	48640 17 Country
MID No. (7)	0010264	19 D & B NO. (11)	0013-815-81	20
Contractor				21
Doc Type	R.I.U.P.H.E.A.S.D 8.D. S.U.H.S.F.N			22
Doc Title	THE TOXICITY OF CHLORINATED NAPHTHALENES WITH COVER LETTER			23
Chemical Name (300 per name)	25	CAS No. (10)	24	
CHLORINATED NAPHTHALENES		999999994		
MONOCHLORONAPHTHALENE		25586-43-0		
PENTACHLORONAPHTHALENE		1321-62-8		

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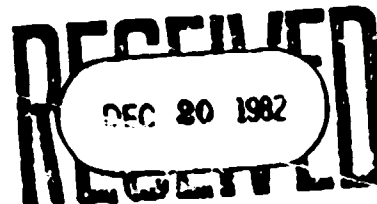


THE DOW CHEMICAL COMPANY

MIDLAND, MICHIGAN 48666

December 9, 1982

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OPTS-84003A

Dear Sir or Madam:

As required by 40 CFR 716, we herewith submit copies of reports which meet the requirements of the referenced rule as Health and Safety Studies. As noted in the statement enclosed with the reports, some contain confidential business information.

The reports are separated into three categories for your convenience.

Package 1. Reports which contain no Confidential Business Information.

Package 2. Reports which contain Confidential Business Information.

Package 3. Reports from which Confidential Business Information has been deleted. (Public File Copy of reports in Package 2).

Each report is marked with an identifying number at the top of the first page of the report, e.g., D-155. Use of this identification number in future correspondence regarding this submission will facilitate handling of questions.

In order to expedite the completion of our search and submission, no attempt was made to determine whether or not we manufactured or processed the chemicals which formed the subject of submitted reports. (40 CFR 716.6). Thus, submission of a report for any given material should not be construed as indicative of Dow's status as a manufacturer or processor of the material.

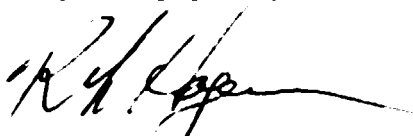
Document Control Office
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December 9, 1982

Many of the submitted reports contain information which is not relevant to Health or Safety Studies of listed chemicals, e.g., references to unlisted chemicals, marketing or process data, account numbers, internal document identification codes or distribution lists. Such information has been deleted from all copies submitted.

The index required by 40 CFR 716.6(b) is enclosed. It lists the Dow identification number and title of each report submitted in CAS number order. Please note that the index contains Dow Confidential Business Information.

We have also included a reprint of a recently published article dealing with methylene chloride.

Very truly yours,



Robert L. Hagerman
Regulatory Specialist
Regulatory and Legislative Issues
Health and Environmental Sciences
1803 Building
(517)636-6855

rt

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D-305

Biochemical Research Laboratory
THE DOW CHEMICAL COMPANY

AUG 9 1944

Subject THE TOXICITY OF CHLORINATED NAPHTHALENES.

Q. 4-4-1
Q. 4-6-1
Q. 4-10-1

File
Chg.
Rec'd 7-1-38
File'd 1-11-44
Work By E. M. Adams

To

Check *Edwin E. Linn* Rep. By *Edwin E. Linn*
4-5-44

The test materials were commercial products, Halowax #1000, #1012, and #1014, produced by the Halowax Corporation. Halowax #1012 was apparently a "trichloronaphthalene", containing 48% chlorine, #1014, a "pentachloronaphthalene", containing 60% chlorine. Halowax #1000 was monochloronaphthalene (22% chlorine).

Acute Oral Toxicity

The doses were measured as standard solutions in olive oil and emulsified in gum acacia solution for administration to cavy by stomach tube.

Material	100% Survival Dose g./kg.	100% Fatal Dose g./kg.
→ Halowax #1000	0.6	1.2
Halowax #1012	0.4	1.8
Halowax #1014	0.005	0.03

There appears to be a rather sharp increase in toxicity as we progress from the trichloronaphthalene to the pentachloronaphthalene.

The acute oral toxicity of #1014 was also determined for the rat. This animal showed a much greater resistance than did the cavy.

100% survival dose = 0.6 g. per kg.

100% fatal dose = 1.8 g. per kg.

Chronic Oral Toxicity

Twenty repeated feedings of Halowax #1014 were made to rats. This substance showed a moderate chronic toxicity.

A dose of 0.1 g./kg. produced severe toxic changes in the liver, a dose of 0.01 g./kg. produced very slight changes, and a dose of 0.001 g./kg. produced none. Toxic effects were observed only in the liver.

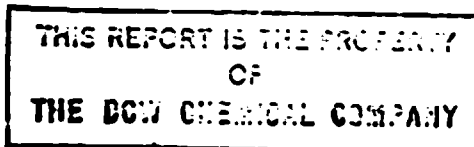
Skin Irritation

In the case of Halowax #1000, the straight material was moderately irritating, but solutions in olive oil as concentrated as 20% had only a very slight action.

Halowax #1012 was tested in solution in olive oil. A 20% solution, the highest obtainable, produced a slight hyperplastic reaction with some simple irritation. On the belly, this solution produced a more marked simple irritation. More dilute solution produced only a very slight irritation with one definite indication of hyperplasia.

Halowax #1014, tested in solution in carbon tetrachloride and in olive oil produced a more marked hyperplastic reaction than did Halowax #1012. This material probably has only a slight activity although the undiluted material could be moderately active as regards the ability to produce hyperplasia.

jf-2 copies.



BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

ACUTE ORAL TOXICITY

Animals Cavy

T

Dose (gm/kilo)	Number of animals that died	Number of animals that survived
0.4	0	4
0.6	0	4
0.8	1	3
1.0	3	1
1.2	4	0
2.0	2	0

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012

ACUTE ORAL TOXICITY

Animals Cavies

T

Dose (gm/kilo)	Number of animals that died	Number of animals that survived
0.4	0	4
0.6	3	1
1.0	1	1
1.4	3	1
1.6	3	1
1.8	4	0
2.0	2	0

BIOCHEMICAL RESEARCH LABORATORY

Material: Hallowax #1014

ACUTE ORAL TOXICITY

Animals Cavy

T

Dose (gm/kilo)	Number of animals that died	Number of animals that survived
0.001	0	1
0.005	0	3
0.01	1	3
0.02	1	3
0.03	4	0
0.05	4	0
0.1	2	0

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

ACUTE ORAL TOXICITY

Animals Rat

T

Dose (gm/kilo)	Number of animals that died	Number of animals that survived
0.01	0	3
0.03	0	3
0.05	0	3
0.07	0	3
0.10	0	3
0.2	0	2
0.6	0	5
0.8	1	4
1.0	3	2
1.4	4	1
1.8	5	0

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Ear _____ 20 Exposures. A 1% solution
 _____ in olive oil was applied to the ear.

Animal # 5-949

Date 7-11-39

Day #	Exp. #	Reaction
1	1	
2	2	Very slight hyperemia.
3	3	" " "
4	4	" " "
7	5	" " "
8	6	" " "
9	7	" " "
10	8	Unchanged
11	9	"
14	10	"
15	11	"
16	12	"
17	13	Very slight hyperemia, follicles very slightly prominent.
21	15	Unchanged.
22	16	Very slight hyperemia and hair loss.
23	17	Slight hyperemia and hair loss.
24	18	" " " " "
25	19	" " " " "
28	20	Slight hair loss.
31		No reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Abdomen17 Exposures.A 1% solution in olive oil was bandaged on.Animal # 5-949Date 7-11-39

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	" "
4	4	" "
7	5	" "
8	6	" "
9	7	Very slight hyperemia.
10	8	" " "
11	9	" " "
14	10	Very slight hyperemia and exfoliation.
15	11	" " " " "
16	12	" " " " "
17	13	Unchanged.
18	14	"
21	15	Slight hyperemia and exfoliation.
22	16	
23	17	Moderate hyperemia, slight exfoliation.
24		" " " "
28		Heating, light scab.
31		No reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Balowax #1000

Prob. _____

SKIN IRRITATION Ear 18 Exposures.a 5% solution in olive oil was appliedAnimal # 5-676Date 11-15-58

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	Very slight hyperemia.
4	4	" " "
7	5	No reaction.
8	6	Very slight follicle prominence.
9	7	
10	8	Very slight hyperemia and follicle prominence.
16	9	No reaction.
17	10	Very slight hyperemia and follicle prominence.
21	11	Very slight hyperemia and exfoliation. (The follicle prominence to due to the olive oil and is not significant).
23	12	
24	13	
27	14	Very slight hyperemia and exfoliation, slight hair loss.
28	15	
29	16	Unchanged.
30	17	"
31	18	"
32		Very slight exfoliation (old).

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Abdomen 6 Exposures.A 5% solution in olive oil was hardened on.Animal # 5-676Date 11-16-38

Day #	Exp. #	Reaction
1	1	
2	2	NO reaction
3	3	" "
6	4	Very slight hyperemia.
7	5	No reaction.
8	6	
9		Marked hyperemia, slight edema, very slight exfoliation.
15		Very slight exfoliation.
21		No reaction.

1219-34-1M-1242

000011

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Ear 18 Exposures.A 5% solution in CCl₄ was applied.Animal # 5-677Date 11-15-38

Day #	Exp. #	Reaction
1	1	
2	2	Very slight hyperemia.
3	3	Slight hyperemia.
4	4	Moderate hyperemia.
7	5	Very slight hyperemia, beginning exfoliation.
8	6	Very slight hyperemia, slight exfoliation.
9	7	Very slight hyperemia, slight exfoliation, slight follicle prominence.
10	8	Unchanged.
16	9	
17	10	Very slight hyperemia and exfoliation, slight hair loss, very slight follicle prominence.
21	11	Very slight exfoliation and hair loss.
23	12	
25	13	Very slight exfoliation, hair loss, and follicle prominence.
27	14	Unchanged.
28	15	"
29	16	"
30	17	"
31	18	"
32		Very slight exfoliation and follicle prominence. Killed and fixed ear. Microscopic examination. Normal except for slight exfoliation.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION AbdomenOne exposure. A 5% solutionin CCl₄ was bandaged on.Animal # 5-677Date 11-16-38

Day #	Exp. #	Reaction
1	1	
2		Whitened (necrosis).
3		Moderate hyperemia a few denatured areas.
6		Marked exfoliation.
15		Very slight exfoliation.
16		No reaction.

1219-34-1M-1242

000013

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012 Prob. _____

SKIN IRRITATION Abdomen 12 Exposures. _____

A 10% solution in olive oil was bandaged on. _____

Animal # 5-948 _____

Date 7-11-39 _____

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	" "
4	4	" "
7	5	Very slight exfoliation.
8	6	" " "
9	7	" " "
10	8	No reaction.
11	9	Very slight hyperemia.
14	10	Slight hyperemia in areas, also apparent thickening.
15	11	
16	12	In areas skin is thickened and hyperemia.
17		Moderate hyperemia and thickening.
21		Slight exfoliation and thickening.
27		No reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Abdomen 20 Exposures.A 20% solution in olive oil was applied.Animal # 5-950Date 7-11-39

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	" "
4	4	" "
7	5	" "
8	6	Very slight hyperemia and exfoliation.
9	7	Unchanged.
10	8	"
11	9	"
14	10	"
15	11	"
16	12	"
17	13	"
18	14	"
12	15	"
22	16	"
23	17	"
24	18	"
25	19	"
28	20	"
29		Slight exfoliation
31		No reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Ear One exposure.

The straight material was applied once.

Animal # 5-536

Date 7-11-38

Day #	Exp. #	Reaction
1	1	
2		Moderate hyperemia, slight edema and blistering.
3		Unchanged.
8		Heavy "scab" coming off.
10		Moderate hyperemia, complete hair loss, marked exfoliation, slight pitting.
15		Moderate hyperemia, marked hair loss, very slight exfoliation, slightly roughened.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Abdomen One Exposure.The straight material was bandaged on for 8 hoursAnimal # 5-961Date 7-12-39

Day #	Exp. #	Reaction
1	1	At end of exposure: no reaction.
2		Very slight hyperemia.
6		Very slight exfoliation.
9		" " "
13		No reaction.

1219-34-1M-1242

000017

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1000

Prob. _____

SKIN IRRITATION Abdomen One Exposure.The straight material was bandaged on for 24 hours.Animal # 5-536Date 7-12-38

Day #	Exp. #	Reaction
1	1	
2		Whitened, slight edema.
3		" moderate edema.
7		Heavy exfoliation, no edema.
9		Old exfoliation adherent to hair, no active reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012

Prob. _____

SKIN IRRITATION Ear 20 Exposures25% solution in olive oil was applied.Animal # 5-960Date 7-11-39

Day #	Exp. #	Reaction
1	1	
2	2	Very slight hyperemia.
3	3	" " "
4	4	" " "
7	5	" " "
8	6	" " "
9	7	" " "
10	8	No reaction.
11	9	" "
14	10	Follicles are very slightly enlarged & raised.
15	11	Unchanged.
16	12	"
17	13	"
18	14	"
21	15	"
22	16	"
23	17	"
24	18	"
25	19	Follicles seem slightly prominent, but are not significantly raised.
28	20	Very slight exfoliation, and follicle prominence.
31		Unchanged
32		"

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012

Prob. _____

SKIN IRRITATION Abdomen 10 Exposures.A 5% solution in olive oil was hardened on.Animal # 5-960Date 7-11-39

Day #	Exp. #	Reaction
1	1	
2	2	Slight hyperemia.
3	3	" "
4	4	Slight hyperemia and blistering.
7	5	Slight exfoliation.
8	6	Slight hyperemia and exfoliation.
9	7	Slight hyperemia and exfoliation, seems to be tender.
10	8	
11	9	Unchanged.
14	10	Moderate hyperemia and exfoliation, one area shows slight denaturation.
15		As above, very tender.
21		Slight exfoliation, indurated black "scab".
28		Healed, scarred.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012

Prob. _____

SKIN IRRITATION Ear 20 Exposures.A 10% solution in olive oil was applied to the ear.Animal # 5-948Date 7-11-39

Day #	Exp. #	Reaction
1	1	
2	2	Very slight hyperemia.
3	3	" " "
4	4	" " "
7	5	No reaction.
8	6	Very slight hyperemia.
9	7	Questionable.
10	8	"
11	9	"
14	10	"
15	11	"
16	12	Slight hyperemia and hair loss.
17	13	Slight hyperemia and hair loss, follicles are becoming prominent.
18	14	
21	15	Slight hyperemia, exfoliation, hair loss, and follicle prominence.
22	16	Unchanged.
23	17	"
24	18	
25	19	Slight hyperemia and hair loss, very slight follicle enlargement (not raised).
28	20	Unchanged.
31		Unchanged, killed and fixed ear. Microscopic examination. Essentially normal.

1219-34-1M-1242

000021

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012 Prob. _____

SKIN IRRITATION Abdomen 12 Exposures. _____

A 10% solution in olive oil was bandaged on. _____

Animal # 5-948 _____

Date 7-11-39 _____

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	" "
4	4	" "
7	5	Very slight exfoliation.
8	6	" " "
9	7	" " "
10	8	No reaction.
11	9	Very slight hyperemia.
14	10	Slight hyperemia in areas, also apparent thickening.
15	11	
16	12	In areas skin is thickened and hyperemia.
17		Moderate hyperemia and thickening.
21		Slight exfoliation and thickening.
27		No reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012

Prob. _____

SKIN IRRITATION Ear 17 Exposures.A 20% solution in olive oil was applied each workday.Animal # 5-534Date 7-12-38

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	Very slight hyperemia.
4	4	" " "
5	5	" " "
8	6	Very slight follicle enlargement.
9	7	" " " "
10	8	" " " "
11	9	Slight hyperemia, very slight follicle enlargement.
12	10	Unchanged.
15	11	Slight follicle enlargement.
16	12	Very slight hyperemia, slight follicle enlargement.
18	13	Unchanged.
19	14	"
20	15	A slight to moderate reaction: Slight follicle enlargement, hard and slightly raised, slight hair loss and exfoliation.
21	16	Unchanged.
22	17	
24		Very slight follicle enlargement, barely raised, slight keratosis. Killed and fixed ear.
		Microscopic Examination: very slight epithelial hyperplasia and pitting, slight exfoliation.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1012

Prob. _____

SKIN IRRITATION Abdomen 11 Exposures.

A 20% solution in olive oil was bandaged on.

Animal # 5-534

Date 7-12-38

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	" "
4	4	" "
7	5	" "
8	6	" "
9	7	Very slight hyperemia.
10	8	" " "
11	9	
14	10	Moderate hyperemia.
15	11	Marked hyperemia.
17		Severe hyperemia.
22		Exfoliation adherent in hair.

1219-34-1M-1242

000024

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Ear 4 Exposures.A 5% solution in CCl₄ was applied each workday.Animal # 5-619Date 11-15-38

Day #	Exp. #	Reaction
1	1	
2	2	Very slight hyperemia.
3	3	Slight hyperemia.
4	4	" "
7		Moderate hyperemia, slight thickening, areas of slight follicle enlargement.
8		Slight hyperemia and thickening. Slight follicle enlargement, raised and hard.
11		Very slight hyperemia. Follicles slightly to moderately enlarged, raised and hard. Slight exfoliation and hair loss.
17		Very slight follicle enlargement and exfoliation.
21		Very slight hyperemia and exfoliation, very slight follicle enlargement.
28		Practically no change - questionable follicle enlargement.
38		No reaction.

1219-34-1M-1242

000025

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Abdomen One Exposure.A 5 % solution in CCl₄ was bandaged on.Animal # 5-679Date 11-16-38

Day #	Exp. #	Reaction
1	1	
2		Slight hyperemia and edema.
3		Moderate hyperemia.
6		Moderate hyperemia, marked exfoliation, very slightly thickened.
10		Marked exfoliation, adherent in hair, no active reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Ear One Exposure.A 5% solution in CCl₄ was applied once.Animal # 5-679Date 11-15-38

Day #	Exp. #	Reaction
1	1	
2		Very slight hyperemia.
4		" " "
7		Very slight hyperemia and exfoliation.
9		Very slight hyperemia and exfoliation, very slight follicle enlargement in 2 areas, raised and hard.
16		Very slight thickening in one spot.
20		No definite reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Ear 7 Exposures.A saturated solution (<10%) in olive oil was applied.Animal # 5-531Date 7-11-38

Day #	Exp. #	Reaction
1	1	
2	2	No reaction.
3	3	Slight hyperemia.
4	4	" "
5	5	" "
8	6	Slight hyperemia and follicle enlargement.
9	7	Slight hyperemia, slight thickening in patches, moderate follicle enlargement, slightly raised but soft.
10		Unchanged.
11		Slight hyperemia and thickening, moderate follicle enlargement, very slightly raised, beginning exfoliation.
15		Slight exfoliation, moderate follicle enlargement, slightly raised and hard.
23		Slight exfoliation and hair loss, slight enlargement of follicles, hard, and slightly raised. A moderate reaction.
27		

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Ear _____ One Exposure. _____

A saturated solution (<10%) in olive oil was applied.Animal # 5-531Date 7-11-38

Day #	Exp. #	Reaction
1	1	
2		No reaction.
3		Very slight hyperemia.
4		" " "
9		Slight follicle enlargement.
15		A few follicles slightly enlarged, raised and hard. A very slight reaction.
23		Slight enlargement of a few follicles, very slightly raised.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Abdomen 4 Exposures.A saturated solution (<10%) in olive oil was bandaged on.Animal # 5-531Date 7-12-38

Day #	Exp. #	Reaction
1	1	.
2	2	No reaction.
3	3	Very slight hyperemia.
4	4	Moderate hyperemia.
7		Areas show marked hyperemia and moderate thickening.
9		Hyperemia thickened areas are spreading.
14		Marked exfoliation.
17		No definite reaction.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowar #1014

Prob. _____

SKIN IRRITATION Ear 12 Exposures.A 5% solution in olive oil was applied to the ear.Animal # 5-919Date 8-1-39

Day #	Exp. #	Reaction
1	1	
2	2	Very slight hyperemia.
3	3	Slight hyperemia.
4	4	" "
7	5	Slight hyperemia and follicle prominence.
8	6	Unchanged.
9	7	Moderate hyperemia.
10	8	Moderate hyperemia, follicles slightly enlarged.
11	9	
14	10	
15	11	Ear is thickened and leathery, follicles are enlarged and raised.
16	12	
17		Slight hyperemia, follicles slightly enlarged and raised. Killed and fixed ear. Microscopic Examination: Moderate enlargement of the follicles, keratosis.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION Abdomen 12 ExposuresA 5% solution in olive oil was bandaged on.Animal # 5-919Date 8-1-39

Day #	Zxp. #	Reaction
1	1	
2	2	Slight hyperemia.
3	3	" "
4	4	" "
7	5	Moderate hyperemia.
8	6	" "
9	7	" "
10	8	" "
11	9	" "
14	10	Moderate hyperemia and thickening.
15	11	
16	12	
17		Moderate hyperemia and thickening, exfoliation.

BIOCHEMICAL RESEARCH LABORATORY

Material: Halowax #1014

Prob. _____

SKIN IRRITATION _____ A 10% solution in olive oil was
 _____ applied to the ear each workday.

Animal # 6-197

Date 4-1-40

Day #	Exp. #	Reaction
1	1	
2	2	
3	3	Slight hyperemia.
4	4	Moderate hyperemia.
5	5	Marked hyperemia.
8	6	Very slight hyperemia exfoliation, thickening and follicle enlargement.
9	7	Same.
10	8	Same.
11	9	Same.
12	10	Same.
15	11	Very slight hyperemia and thickening, slight exfoliation and follicle enlargement, (slightly raised).
17	12	Same.
18	13	Same.
19	14	Slight exfoliation and thickening. Follicles slightly enlarged and raised.
22		Same. Killed for autopsy. Microscopic Examination. Epithelium very slightly thickened, but shows marked pitting. Pits contain keratin and debris.

1219-34-1M-1242

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OFFICE OF TOXIC SUBSTANCES
CODING FORM FOR GLOBAL INDEXING

REV. 7/27/82

Microfiche No. (7) •	206141		1	No. of Pages	2
Doc I.D.	878211379	3	Old Doc I.D.	825	4
Case No.(s)	OTS 84003A				5
Date Produced (6)	6	Date Rec'd (6)	7	Conf. Code •	8
042071		122082		N	
Check One: <input type="checkbox"/> Publication <input type="checkbox"/> Internally Generated <input checked="" type="checkbox"/> Externally Generated					
Pub/Journal Name					9
					9
Author(s)					10
Organ. Name					11
DOW CHEM CO					
Dept/Div					12
P.O. Box	13	Street No./Name			14
City	15	State	16	Zip	17
MIDLAND		MI		48640	
MID No. (7)	19	D & B NO. (11)			20
0010264		0013-815-81			
Contractor					21
Doc Type					22
• R.I. • U.P. • H.E.A.S.D. 8.D. • S.U. H.S. F.N.					
Doc Title					23
CHLORACNE STUDY CONDUCTED ON					
PENTACHLORO-NAPHTHALENE					
Chemical Name (300 per name)			25	CAS No. (10)	24
CHLORINATED NAPHTHALENES				999999994	
PENTACHLORO - NAPHTHALENE				1321-64-8	

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CHEMICAL BIOLOGY RESEARCH

CHLORACNE STUDY CONDUCTED ON PENTACHLORO-
NAPHTHALENE

FIL _____
K.F. _____
CHG. _____
REF. _____
SOURCE _____
SUB. BY C. Champlain
REP'T. BY JMNorris
CHECKED BY PJGehring
DATE 4/20/71

Chloracne T#'s 2998A, 2998B, 2998C

PRELIMINARY SUMMARY WITH CONCLUSIONS BASED ON THE SAMPLE RECEIVED. ADDITIONAL INFORMATION INCLUDING THE
EFFECTS OF REPEATED EXPOSURE MAY BE REQUIRED AS SPECIFIC USES AND FORMULATIONS ARE DEVELOPED OR IF
PROCESS CHANGES OCCUR.

A sample of the test material was submitted to Chemical Biology Research for evaluation as a chloracnegen. Varying concentrations of the test material in chloroform were prepared and applied to the inner surface of one rabbit ear per solution, 5 days per week for 4 weeks, at a dose of 0.1 ml/day.

Results of the chloracne studies conducted are presented in the following table.

LAB CODE LEFT
AND REPORT NO.

Chloracne T#	Concentration of solution	Response
2998A	10%	questionable (3)
2998B	0.01%	negative (1)
2998C	0.005%	negative (1)
2998AA (Rerun)	10%	positive (5)

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Rockville
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